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The Virginian Railway

Traffic Development and Operating Economies

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The National City Company

National City Bank Building
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The National City Company

National City Bank Building

New York

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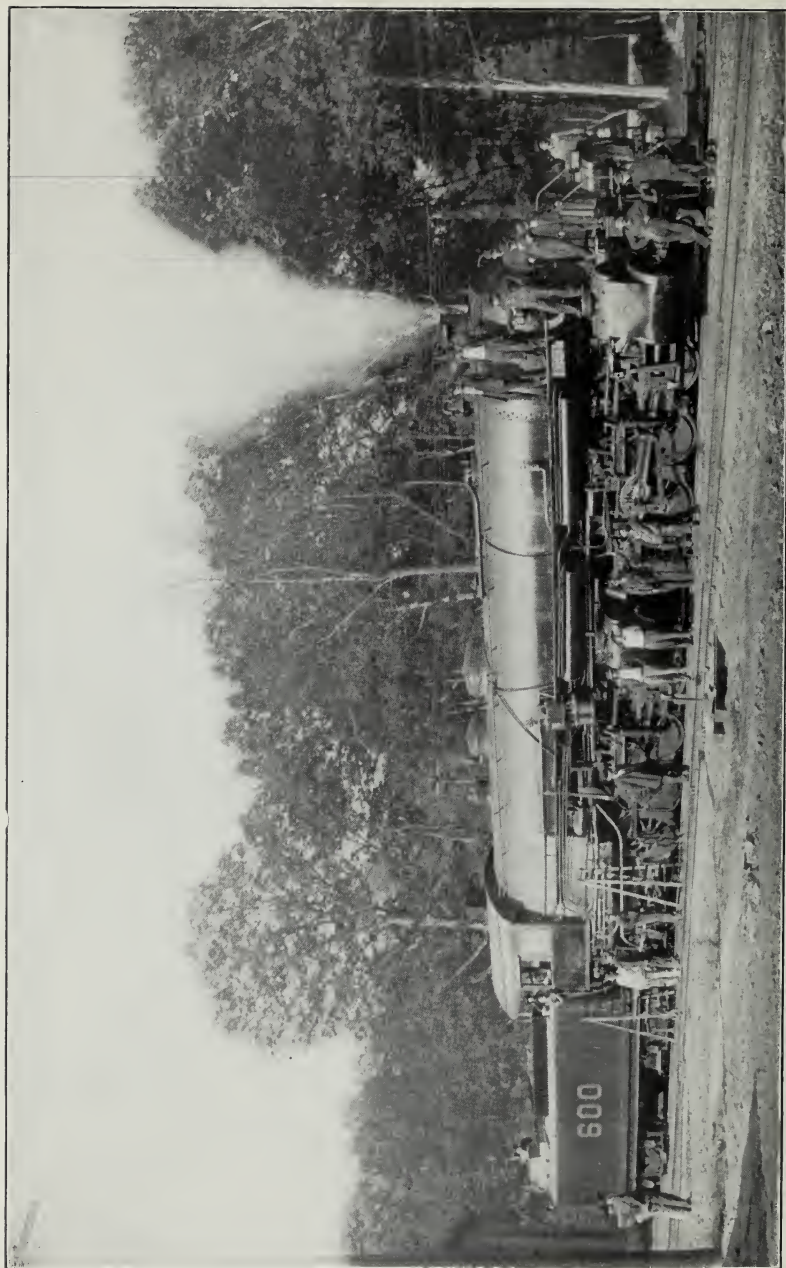
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Locomotive used on the Virginian Railway. The two sets of drivers give virtually two locomotives in tandem.
Heavier engines of this type are in use and under construction for the road.

The Virginian Railway

Several years ago the late H. H. Rogers, Standard Oil millionaire, conceived the idea of opening up the rich coal deposits of the New River and Pocahontas fields of West Virginia by building a north and south railroad which would link together the Chesapeake & Ohio and the Norfolk & Western. His plan was to build a road of superior construction tapping these richest of all coal fields, and offer it for sale to one of the two roads mentioned. Construction was started almost immediately and carried on until practically all of the present Virginian Railway in the State of West Virginia had been completed. About this time several Government suits against the coal roads were impending and it was thought that neither the Chesapeake & Ohio nor the Norfolk & Western would care to acquire new properties at the risk of being drawn into litigation. It, therefore, appeared that if the proposition were not projected on a large scale, complete failure would result.

Mr. Rogers, although deprived of the financial assistance of his friends and business associates, who declared the scheme unfeasible and doomed to failure, undertook to furnish the most perfect possible transportation machine to bring these coals to the seaboard at as low a ton-mile cost at least as the Chesapeake & Ohio and Norfolk & Western. More than 5,000 miles of exploration surveys were made before the 347 miles of low grade line

were finally selected between Sewalls Point on Hampton Roads and the gathering yards at Princeton, and the best possible location was finally secured and used. Mr. Roger's extraordinary vision and keen ability to analyze changing conditions made possible the planning and building of the Virginian Railway.

So great was Mr. Rogers' faith in the undertaking that he drew solely upon his own private fortune to carry on the construction, until 1907 when he was compelled to negotiate loans secured principally by pledge of his own personal collateral. In this year \$10,000,000 6% Notes of the Tidewater Company (the construction company) were issued. They matured in 1909, but were mostly exchanged for a new issue of \$17,000,000 Convertible 6% Gold Notes due June 1, 1913, which were secured by \$34,800,000 Virginian Railway First Mortgage 5% Bonds and other collateral.

In the Spring of 1912 the capitalization of the Virginian Railway Company was readjusted. The Convertible 6% Notes were called for payment June 1, 1912, at 101 and interest, the mortgage securing the \$34,800,000 First Mortgage 5's was canceled and an issue of \$25,000,000, of a total authorized issue of \$75,000,000, new First Mortgage Fifty-Year 5% Gold Bonds, Series "A," due May 1, 1962, was sold to a banking syndicate who in turn offered them to the public at 99 and accrued interest.

This readjustment of capitalization was effected in order to strip the Virginian of corporate technicalities involving its inter-relations with Mr. Rogers' Estate and the Tidewater Company.

By accepting new Preferred Stock for its claims, the Estate ceased to be a creditor of the road, whose bonded debt was transferred to the public. The Rogers' interests retain the proprietorship by owning directly, or indi-

rectly through the Tidewater Company, practically all the \$27,955,000 Preferred and \$31,271,500 Common Stocks.

The actual cash cost of the property at the time of the capital readjustment had been over \$50,000,000, against which only \$25,000,000 of the new First Mortgage 5's and \$2,400,000 Equipment Trust Certificates were issued, the Preferred Stock fairly representing the cash investment of the Rogers' interests.

In February, 1914, \$2,000,000 additional First Mortgage Bonds were marketed at 99½ and interest. In January, 1916, the last issue of \$2,500,000 was marketed at 98½ and interest.

The present outstanding capitalization of the Virginian is as follows:

| | |
|---|--------------|
| Preferred Stock | \$27,955,000 |
| Common Stock | 31,271,500 |
| First Mortgage 5's due May 1, 1962..... | 29,500,000 |
| *Equipment Trust 5's, Series "A"..... | 562,000 |

*Mature \$188,000 each May 1 and \$187,000 each November 1.

Earnings.

The gross earnings and income available for interest on the Company's funded debt after all other deductions since the first year of operation have been as follows:

| Years ended June 30: | Total Operating Revenues | Available for Interest on Funded Debt | Interest on Total Funded Debt | Number Times Earned |
|-------------------------|--------------------------------|---|-------------------------------------|---------------------------|
| 1910..... | \$2,063,190 | \$ 204,209 | \$1,885,675 | 0.11 |
| 1911..... | 3,671,224 | 939,464 | 2,052,819 | 0.46 |
| 1912..... | 4,837,598 | 1,263,124 | 2,011,525 | 0.63 |
| 1913..... | 5,842,584 | 2,382,485 | † 1,364,050 | 1.75 |
| 1914..... | 6,340,079 | 2,641,049 | 1,380,196 | 1.92 |
| 1915..... | 5,820,406 | 2,164,471 | 1,426,550 | 1.52 |
| 1916..... | 7,390,381 | 3,331,957 | 1,463,703 | 2.28 |
| *1916..... | 8,455,964 | 3,996,134 | 1,516,828 | 2.63 |

*Calendar year.

†Decrease in interest charges the result of capital readjustment in 1912.



General view of Sewalls' Point coal unloading pier from the shore. At the left is the pier proper with its incline-approach.
To the right is the car dumper emptying a railroad car into one of the pier cars.

The average annual growth of total operating revenues since 1910 has been over 26%, and the average annual increase of income available for interest on the funded debt over 85%. The remarkable development of tonnage coupled with the highest degree of operating efficiency and a reduction of fixed interest charges have enabled the Virginian to earn the interest charges on its funded obligations 2.63 times in the calendar year 1916, compared with little over 1/10th times in 1910. In 1916 it earned 8.86% on its \$27,955,000 Preferred Stock.

As long as there exists a demand for the highest grade bituminous coal from Atlantic seaports, New River and Pocahontas coal tonnage will be the first to move. With practically unlimited tonnage of this coal along its lines, and with the most efficient means of transporting it to the seaboard of any railroad on the Atlantic Coast, the Virginian is assured a steady and rapid growth of traffic.

Description of the Property.

The property, as it exists today, consists of 441 miles of main line extending south from Deepwater, on the Kanawha River, W. Va., a distance of about 85 miles through the Kanawha, New River and Pocahontas coal fields, to the gathering yards at Princeton, thence east to Sewalls Point on Hampton Roads beyond Norfolk, Va.; 35 miles of branch lines in the coal fields, 248 miles of sidings and other track, and a coal loading pier at Sewalls Point. The Virginian operates 34 miles additional, partly under lease and partly under trackage rights, including entrance into the passenger terminal at Norfolk, which it owns jointly with the Norfolk & Western and Norfolk Southern. The grades eastbound from the assembling yards at Princeton, W. Va., to Sewalls Point, a distance of 347 miles, were established at 0.2 of 1%



Portion of main line at Eggleston, Virginia, 309 miles from Sewalls' Point.

with a short pusher grade out of Princeton yard and a 9-mile pusher grade over Allegheny Mountain where the grade is but 0.6 of 1%. *This line is practically a gravity road in the direction of heavy traffic movement.* The main line rails are of 85 and 100 pound steel, laid upon white oak ties, and ballasted throughout. The bridges and trestles are of heavy steel and in the case of the more important ones provision has been made for double tracking.

On December 31, 1916, the Virginian had the following equipment in service:

| Locomotives in Freight Service: | Average Tractive Power (Pounds) | Total Tractive Power (Pounds) |
|---------------------------------|---------------------------------|-------------------------------|
| 8 Consolidation | 29,400 | 235,200 |
| 6 Mikado | 45,200 | 271,200 |
| 42 " | 56,000 | 2,352,000 |
| 18 " | 60,800 | 1,094,400 |
| 4 Mallet | 69,900 | 279,600 |
| 8 " | 88,900 | 711,200 |
| 1 " | 102,100 | 102,100 |
| 6 " | 115,000 | 690,000 |
| 5 Switch | 45,200 | 226,000 |
| <hr/> | <hr/> | <hr/> |
| 98 | 60,833 | 5,961,700 |

| Cars in Freight Service: | Car Capacity (Pounds) | Total Capacity (Tons) |
|---------------------------------|-----------------------|-----------------------|
| 547 Box | 80,000 | 21,880 |
| 861 Stock | 80,000 | 34,440 |
| 174 Flat | 80,000 | 6,960 |
| 2,989 Flat Bottom Gondolas..... | 100,000 | 149,450 |
| 997 " " " | 110,000 | 54,835 |
| 147 Hopper Coal | 100,000 | 7,350 |
| 2,192 Hopper Steel Coal..... | 100,000 | 109,600 |
| <hr/> | <hr/> | <hr/> |
| 7,907 | 97,259 | 384,515 |

Other Equipment:

| |
|--------------------------------|
| 10 Passenger Train Locomotives |
| 46 " " Cars |
| 133 Work Train Units |
| 4 Barges |

A large majority of the freight locomotives and all the coal cars are of the heaviest modern type, the cars being of 50 and 55-ton capacity.

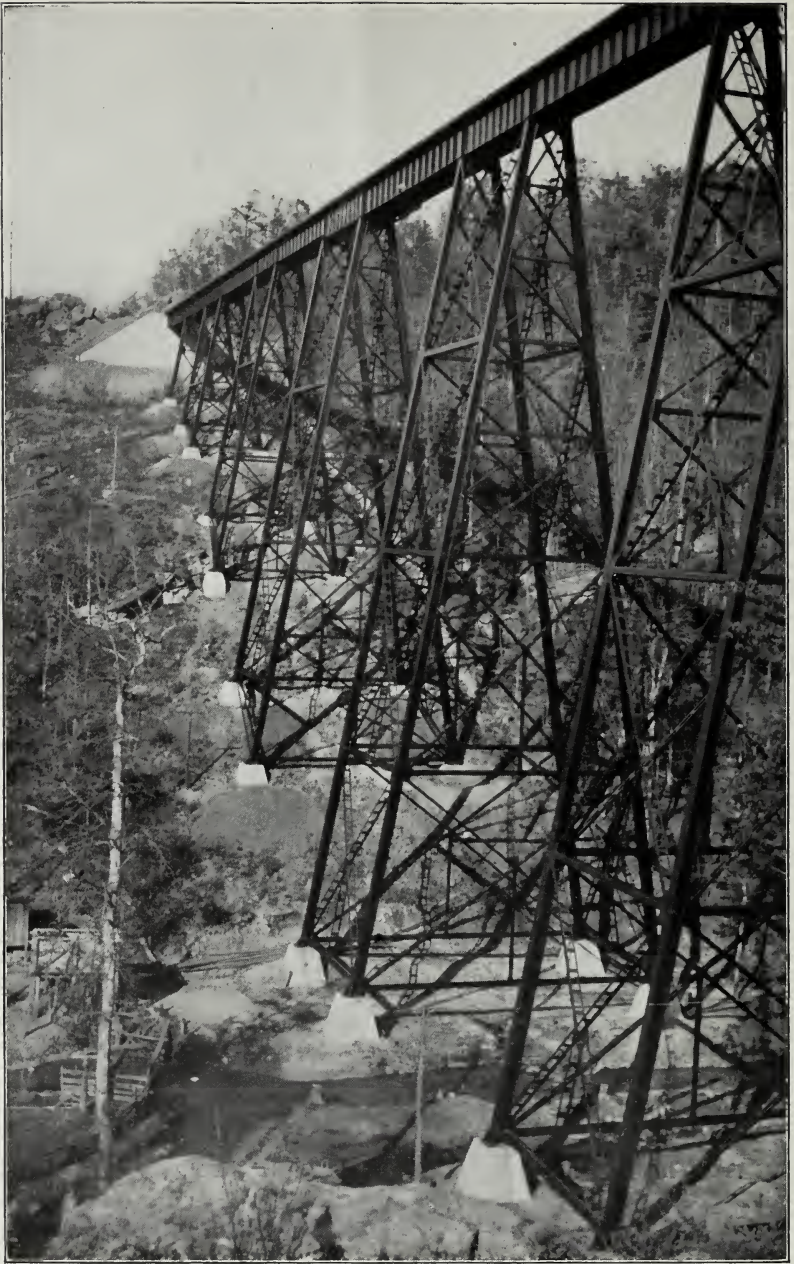


The outshore end of coal pier showing adjustable chutes and two conveyor cars. The unloading is done by the Company at the expense of the shipper or consignee.

The Tidewater terminal property, which cost practically \$3,000,000, comprises 611 acres of valuable water front on Hampton Roads, and a modern steel pier 1,040 feet long, on concrete foundations, with provision for loading coal into ships on both sides of the pier. This pier embodies the very latest improvements of ocean and lake development. It is operated by electricity and has a loading capacity of 1,500 net tons per hour, or 36,000 tons in 24 hours, and this capacity has been exceeded in actual practice. Four of the largest vessels can be berthed at one time. Accommodations for vessels drawing 30 feet of water are available on both sides of the pier at low tide. The Virginian's tidewater terminal is located about 5 miles nearer the ocean highway than that of the Norfolk & Western at Lambert's Point and about 6 miles nearer than that of the Chesapeake & Ohio at Newport News. This is a decided advantage in point of time consumed between the arrival and departure of coal-carrying vessels.

A broad policy has obtained in the purchase of property at those points where additional facilities will be required for the future development and extension of the Virginian Railway, or where it may be advisable to establish joint railroad and commercial interchange facilities; also at those points where the natural resources indicate a demand at an early date for industrial sites and accommodations. To provide for this over 1,282 acres of real estate have been purchased at the following points:

| | |
|---------------------------|-----------|
| Sewalls Point | 611 acres |
| Norfolk City | 11.4 " |
| Southern Branch Yard..... | 67 " |
| Victoria | 69 " |
| Roanoke | 72 " |
| Kellysville | 24 " |
| Princeton | 420 " |
| Deepwater | 7.7 " |



Black Lick Viaduct, West Virginia. The highest trestle on the road (207 ft.)

Security of the First Mortgage Bonds.

The Virginian First Mortgage 5's are secured by direct first mortgage on the entire road owned and all the equipment except that portion upon which \$562,000 Equipment Trusts, maturing serially 1917-1918, have a first lien; and by first collateral lien, through pledge of all the bonds and capital stock (except Directors' Shares) of The Virginian Terminal Railway Company, upon the coal loading pier and terminal property at Sewalls Point. After deducting the net cost of equipment and tidewater terminal property under the mortgage, the \$29,500,000 First Mortgage Bonds are outstanding at the rate of only \$36,400 per mile. The cash cost of the property has been over \$54,500,000, or over \$25,000,000 in excess of the par value of these bonds outstanding.

Price Range of These Bonds.

The following table shows the average price of the bonds as compared with the surplus earnings and the accumulated profit and loss surplus:

| | | | Average Price | Surplus Earnings | Profit and Loss Surplus |
|----------|------|------|------------------|---------------------|----------------------------|
| Fiscal | Year | 1913 | 98.05 | \$1,018,435 | \$ 928,341 |
| " | " | 1914 | 98.54 | 1,260,853 | 2,142,737 |
| " | " | 1915 | 96.53 | 737,921 | 3,590,176 |
| " | " | 1916 | 96.67 | 1,868,254 | 5,510,742 |
| Calendar | " | 1916 | 98.53 | 2,479,306 | 6,661,920 |

Railroad credit is determined largely by railroad earnings. The present price of these bonds (about 94) in no way reflects declining credit, inasmuch as they sold as high as 100½ in February, 1914, when the surplus earnings were only one-half as much as they were in the calendar year 1916, and current earnings are the greatest in the history of the Company. Although the bonds are selling below normal, due to general outside conditions, the

credit of the Company has been steadily improving, and likewise the security behind the bonds increasing, as will be seen from the foregoing table.

A detailed analysis of the traffic development and operating performances of the Virginian, as compared with other roads, is shown on pages 23 to 28.

In order to show that the Virginian Railway, through its actual operating performances, has not only measured up to, but exceeded the highest expectations and vindicated the judgment of its sponsors, it is well to have in mind a brief outline of the conditions which led up to the building of the road, namely, the growing importance of the coal industry, the demand for West Virginia coal and the inadequate transportation facilities existing in this field prior to the completion of the new road.

Growing Demand for West Virginia Coal.

The coal consumption per capita in the United States has grown from 0.278 tons in 1850 to 5.250 tons in 1910, an increase of 1788%, whereas the population increased only 230% during that period. During the twenty years ended 1910, the annual production of anthracite coal increased from about 46,000,000 net tons to about 84,000,000 net tons, or 82%, whereas during the same period the annual production of bituminous coal increased from about 111,000,000 net tons to about 417,000,000 net tons, or 275%.

The four largest bituminous coal producing states are, in order of their importance, Pennsylvania, West Virginia, Illinois and Ohio, all of which, except Illinois, are in the Appalachian Field, which produces over 70% of the coal mined in the United States. During each of the two decades ended 1900 and 1910, Pennsylvania, Illinois and Ohio nearly doubled their output, whereas *West Virginia practically trebled its output.*

Mr. E. W. Parker, Statistician of the U. S. Geological Survey, in his report entitled "The Production of Coal," states that the Pocahontas and New River coals of West Virginia are the best and cheapest in the United States. By reason of the thickness and wide distribution of the veins, the bituminous coal in these fields contributes a vast reservoir of railway traffic.

The factories, steam railroads, electric railway and electric light and power stations of the Eastern and Middle States and coastwise and maritime commerce of the Atlantic seaboard demand enormous quantities of this high-grade coal, delivered (as far as possible) by water transportation. The rapidly growing needs for "high fuel value" coal for export to foreign countries is another important factor to be considered as an added stimulus to the demands upon the West Virginia fields. Apart from the fuel value of New River and Pocahontas coals, the carriage by sea from Hampton Roads (second only to New York harbor upon the Atlantic Coast in port facilities) to Boston and other New England ports and to New York, Philadelphia, Baltimore and abroad, is a highly favorable feature giving preference to these coals from West Virginia over all-rail (that is, higher price) fuels from other fields.

The coal lands in a wide strip of territory in the heart of the New River and Pocahontas fields lay idle for many years because of inadequate transportation facilities. The vastness of the coal supply in mines already in operation, the development of entirely new mines, and the increasing demand for means of moving the supply, justified improved transportation facilities. The operators of existing mines and the projectors of new ones found existing highways inadequate to keep pace with their actual and prospective shipments to the growing markets for their product.



An 8-foot seam of clean coal exposed in cut on winding gulf branch of Virginian Railway, 400 miles from tidewater.

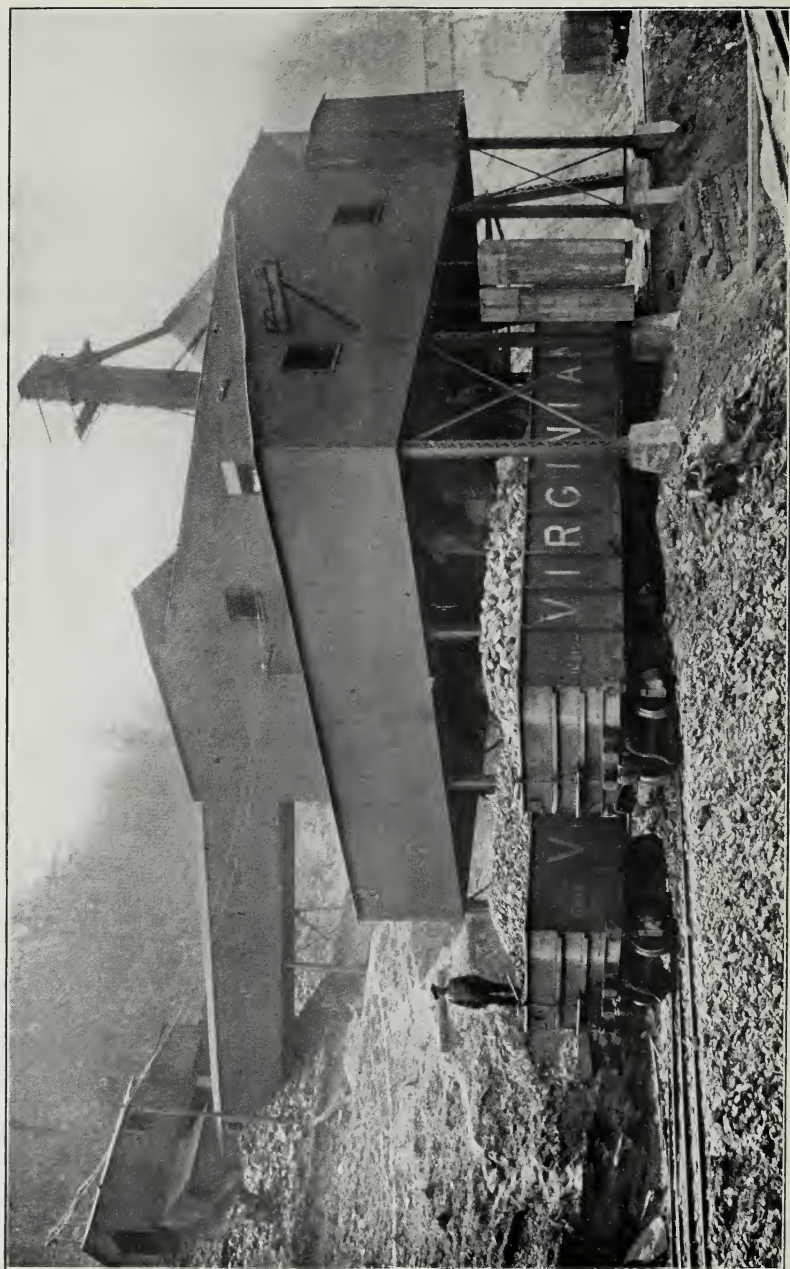
Coal Reserves Along the Virginian.

Based upon a report by I. C. White, State Geologist of West Virginia, the tonnage within the region traversed by the Virginian, its connections and branches, either built or projected, is estimated at 20,000,000,000 net tons. Of this amount about 4,000,000,000 net tons are tributary to the present lines and the balance, or 16,000,000,000 net tons, is tributary to its proposed extensions. If the Virginian secures but one-third of the potential tonnage along its existing lines, it will require 141 years at the annual rate of 10,000,000 net tons to exhaust the veins now considered workable. If the Virginian secures but one-third of the potential tonnage along its present and proposed lines, it will require 700 years at the annual rate of 10,000,000 net tons to exhaust the veins now considered workable.

The present lines of the Virginian pass through and over these coal measures for 85 miles from Deepwater on the Kanawha River to Rock on the Bluestone, along which entire distance commercial coal is accessible to the railway either above or below ground. The development of tonnage on this line depends upon the bituminous coal market at Atlantic seaports, and the Virginian's ability to secure a remunerative portion of the coal traffic by furnishing adequate means of transportation.

Importance of Coal Traffic.

Coal traffic is perhaps as remunerative as any handled by the railroads. As handled by the Virginian, coal yields 16½ cents per car-mile, as compared with 10 cents for general merchandise on other roads. Not only is this a marked advantage, but general merchandise is very expensive to load and unload. On the Virginian,



"On the Virginian, coal is loaded by the shipper and the facilities are provided by him."

coal is loaded by the shipper and the facilities are provided by him; it is unloaded by the Company at the expense of the shipper or consignee.

The foundation of the prosperity of the Norfolk & Western Railroad is its coal and coke traffic. In the year ended June 30, 1916, over 86% of the Norfolk & Western's operating revenues was derived from freight traffic. About 72% of the revenue tonnage carried consisted of coal and coke alone.

The freight traffic revenue of the Philadelphia & Reading in the year ended June 30, 1916, comprised over 83% of its operating revenues. Over 51% of this freight revenue was derived from coal traffic alone.

In the year ended June 30, 1916, over 81% of the operating revenues of the Chesapeake & Ohio consisted of freight revenues, and nearly 72% of the freight tonnage consisted of coal and coke traffic.

Over 84% of the Delaware & Hudson's operating revenues was derived from freight traffic in the year ended December 31, 1916. Of this freight revenue over 52% was derived from the transportation of coal alone.

Operating Advantages Over Competitors.

There are three reasons of prime importance why the Virginian can render more efficient service than its competitors:

1. The Virginian was constructed with lower grades and less curvature than any other railway traversing the Appalachian coal fields. *It is practically a gravity road in the direction of heavy traffic movement* and can thus move heavier train loads at a lower cost per ton-mile than

any other railroad delivering bituminous coal on the Atlantic seaboard.

2. The fact that it was constructed and equipped especially for the carrying of coal and other heavy freights as the central idea enables the Virginian to devote practically its entire resources and energy to the moving of its freight without the congestion ordinarily resulting from the operation of numerous passenger and express trains.

3. The Virginian's coal tonnage originates on its own lines, is loaded into its own cars, transported over its own rails and delivered to vessels at tidewater through its own terminals, the empty cars being hauled back directly to the source of traffic. *Its cars do not move beyond its control* and consequently its motive power and rolling stock may be kept adequate for its own exclusive business at all times. It is thus in a position to give to the coal and other "heavy freight" shippers along its tracks, branches and connections, ample facilities in supply of equipment, as well as rapid, cheap and efficient service between the mines and markets.

Growth of Coal and Coke Traffic.

The following table shows the remarkable growth of coal and coke tonnage on the Virginian since June 30, 1910, the end of the first year's operation between the West Virginia coal fields and Sewalls Point:

| Years ended | | Coal and Coke | All Freight | Coal and Coke |
|-------------|-----------|---------------|-------------|--------------------------------|
| June 30: | Net Tons | Revenues | Revenues | Revenue to All Freight Revenue |
| 1910..... | 989,239 | \$1,152,046 | \$1,739,188 | 66.2% |
| 1911..... | 2,154,939 | 2,590,673 | 3,307,017 | 78.3% |
| 1912..... | 3,104,928 | 3,694,611 | 4,436,402 | 83.2% |
| 1913..... | 3,777,602 | 4,511,475 | 5,350,848 | 84.3% |
| 1914..... | 4,124,926 | 4,957,929 | 5,790,645 | 85.6% |
| 1915..... | 3,605,640 | 4,360,261 | 5,070,491 | 85.9% |
| 1916..... | 4,729,091 | 5,715,253 | 6,497,994 | 87.9% |
| *1916..... | 5,512,912 | 6,633,224 | 7,469,622 | 88.8% |

*Calendar year.

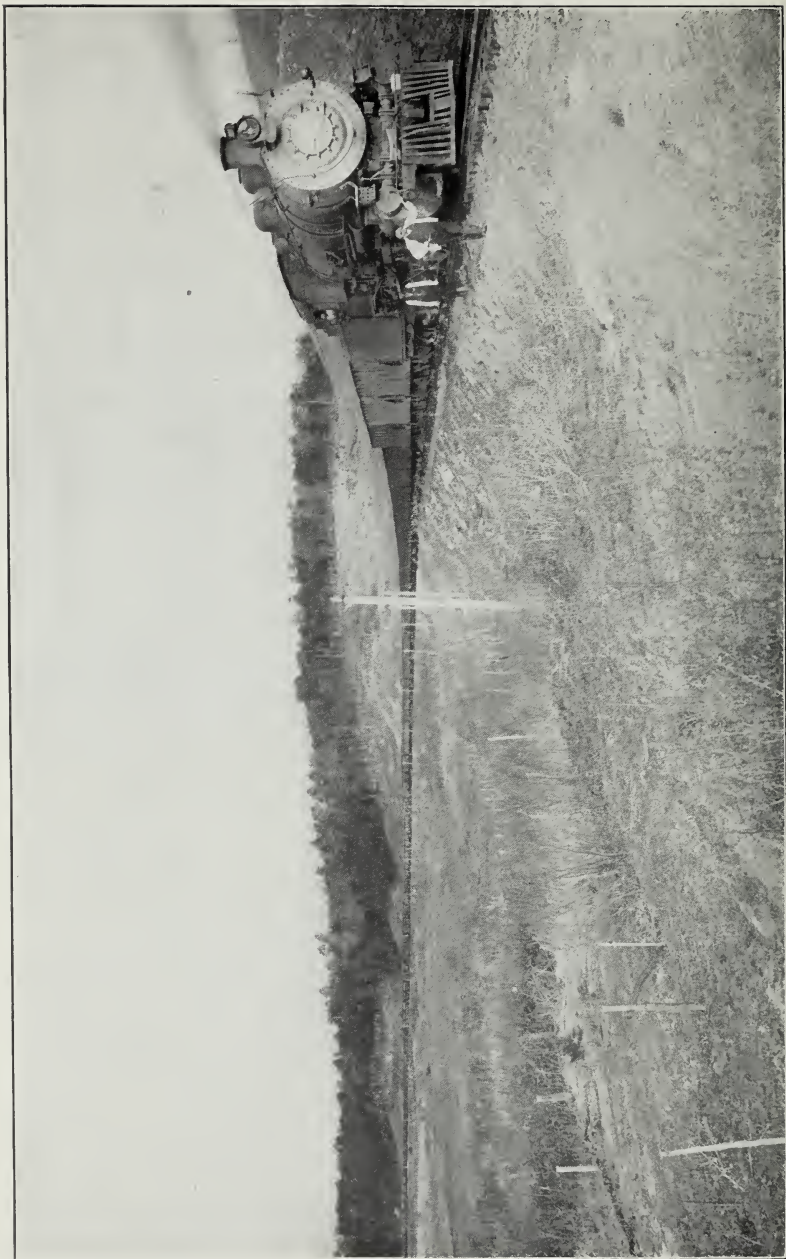
From June 30, 1910 to 1916 the average annual increase of the Virginian's coal and coke tonnage was 35.2%, compared with 11.8% for the Norfolk & Western and 10.2% for the Chesapeake & Ohio.

The location of new industries along the lines of the Virginian has been steady and rapid. On June 30, 1910, the Company reported 152 industries. From that time to June 30, 1916, the Company reported 284 additional industries, of which 195 were lumber, planing and saw mills, stave factories and other woodworking establishments; and 20 were new coal industries. Thus the total growth in number of new industries during the period was over 186%.

Operating Efficiency.

The Virginian, by reason of its low curvature, favorable grades and superior motive power equipment, performs the task of a giant. It is a common occurrence for one locomotive to haul 85 fifty-ton cars about 10% overloaded (4,675 tons revenue freight) from Princeton, W. Va., to Roanoke, Va., 97 miles; and 100 cars (5,500 tons revenue freight) from Roanoke to tidewater, 250 miles, without "breaking" the train, and requiring only 356 locomotive-miles (including helper 9 miles) to accomplish the task. In other words, on such hauls, 356 loaded revenue freight locomotive-miles produce 1,828,475 revenue ton-miles of traffic or over 5,100 revenue ton-miles per loaded revenue freight locomotive-mile. Based upon the authority of a well known railroad expert, the same locomotive can perform between two and three times the service on the Virginian than it can perform on the lines of its strongest competitor.

The following figures based upon actual performance of road locomotives for the year ended December 31, 1916, show the superior motive power and train-load



With a gravity road practically all the way from the gathering yards at Princeton, West Virginia, the Virginian hauls the largest average train loads of any railroad in the United States.

capacity of the Virginian compared with its two competitors, the Chesapeake & Ohio and the Norfolk & Western, and four of the other "heaviest load carriers" in the United States:

| | *Avge. Tractive Power of Frt. Locomotives | Avge. Revenue Freight Train Load (Tons) | Revenue Ton-Miles per Frt. Loco. Mile |
|---------------------------------|---|---|---|
| | Pounds | 1916 | 1916 |
| Virginian | 61,674 | 1,583 | 1,325 |
| Norfolk & Western..... | 48,600 | 979 | 697 |
| Chesapeake & Ohio..... | 46,614 | 1,007 | 891 |
| Pittsburgh & Lake Erie..... | 46,396 | 1,436 | 1,398 |
| Carolina, Clinchfield & Ohio .. | 60,305 | 967 | 706 |
| Duluth, Missabe & Northern.. | 42,385 | 1,444 | 1,363 |
| Bessemer & Lake Erie..... | 43,301 | 1,202 | 687 |

*Road locomotives (excluding switching) in revenue freight service.

Herein lies one of the Virginian's secrets of success. Equipped with freight locomotives having an average tractive power of 26.9% more than the Norfolk & Western's and 32.3% more than the Chesapeake & Ohio's, and *with a gravity road practically all the way, it hauls the largest average train loads of any railroad in the United States.* In fact the Virginian's train loads have averaged the highest over a period of several years. In 1916 its average train load was 61.7% greater than that of the Norfolk & Western and 57.2% greater than that of the Chesapeake & Ohio.

The average car load per loaded car and per loaded and empty car on the Virginian is also greater even than that of the above roads, comparing in the calendar year 1916 as follows.

| Revenue Freight Car Load | Tons Per Loaded Car | Tons Per Loaded and Empty Car |
|--------------------------|------------------------|----------------------------------|
| Virginian | 48.76 | 25.51 |
| Norfolk & Western..... | 33.94 | 20.96 |
| Chesapeake & Ohio..... | 34.10 | 21.40 |

The average car load per loaded car was 43.6% greater than that of the Norfolk & Western and 42.9%

greater than that of the Chesapeake & Ohio. The average car load per loaded and empty car was 22.2% greater than that of the Norfolk & Western and 19.2% greater than that of the Chesapeake & Ohio.

Big train loads with a long haul and minimum locomotive mileage mean greater earning power. The Virginian's average haul in 1916 was 361.38 miles; the Norfolk & Western's 260.88 miles, the Chesapeake & Ohio's 271.00. Here again the Virginian enjoys an advantage over these roads.

The revenue per ton of revenue freight hauled and the revenue per freight train-mile for these three roads in 1916 were as follows:

| | Revenue Per Ton Hauled | Revenue Per Freight Train-Mile |
|-----------------------------|------------------------------|--------------------------------------|
| Virginian | \$1.2259 | \$5.3711 |
| Norfolk & Western | 1.1011 | 4.1347 |
| Chesapeake & Ohio | 1.0370 | 3.8474 |

The Virginian's advantage in revenue per ton hauled lies in the longer haul, and per freight train-mile in the larger freight train load.

The ratios of total operating expenses to total operating revenues of the Virginian, Chesapeake & Ohio, and the Norfolk & Western have been as follows:

| | 5-Year Average to June 30, 1915 | Year ended June 30, 1916 | Year ended Dec. 31, 1916 |
|-----------------------------|------------------------------------|-----------------------------|-----------------------------|
| Virginian | 58.46% | 52.03% | 50.75% |
| Norfolk & Western | 65.31% | 56.16% | 56.36% |
| Chesapeake & Ohio | 68.58% | 65.90% | 65.62% |

In the last year above, the "Cost of Conducting Transportation" on the Virginian amounted to 21.19% of its total operating revenues, whereas the same item for

the Norfolk & Western and the Chesapeake & Ohio amounted to 24.86% and 28.80% respectively.

The measure of freight efficiency is the "ton-mile cost," or the cost of hauling a ton of freight one mile. The ton-mile costs of the railroads in the United States are the lowest in the world. The Virginian's ton-mile costs are, we believe, the lowest in the United States.

The following comparisons based on performances for the calendar year 1916 show the Virginian's superiority in this respect:

| | Ton-Mile Cost (cents) | Virginian Advantage |
|-----------------------------------|--------------------------|------------------------|
| Virginian | .172 | |
| Norfolk & Western..... | .238 | 27.8% Lower |
| Chesapeake & Ohio..... | .253 | 32.1% " |
| Pittsburgh & Lake Erie..... | .377 | 54.4% " |
| Carolina, Clinchfield & Ohio..... | .320 | 46.2% " |
| Duluth, Missabe & Northern..... | .282 | 39.1% " |
| Bessemer & Lake Erie..... | .256 | 32.8% " |

With perhaps the exception of one year the Virginian's ton-mile cost of operation has shown a steady decline since 1910. This in itself is a tribute to the highly efficient operating staff of the Company.

Growth of Freight Traffic Density.

As indicated on page 22, there has been a marked industrial growth along the Company's lines. With operating conditions in its favor, it remains for the Virginian to continue developing its freight traffic density. The unit of freight traffic density is the "ton-mile per mile of road operated." The freight traffic density of any railroad is the total number of ton-miles of traffic produced per mile of road operated during a given year.

The Virginian's progress in this respect has been remarkable, and compares with that of its neighboring trunk lines as follows:

| Years ended June 30: | Virginian | Norfolk & Western | Chesapeake & Ohio |
|-------------------------|---------------------------------------|-------------------|-------------------|
| | (Ton-miles per mile of road operated) | | |
| 1910 | 902,952 | 3,456,296 | 3,161,307 |
| 1911 | 1,930,266 | 3,446,940 | 3,009,620 |
| 1912 | 2,666,893 | 3,994,718 | 2,957,056 |
| 1913 | 3,174,355 | 4,378,016 | 2,886,968 |
| 1914 | 3,368,816 | 4,497,010 | 3,001,617 |
| 1915 | 2,934,450 | 4,367,663 | 3,435,061 |
| 1916 | 3,786,950 | 5,728,469 | 4,335,013 |
| Average Annual | | | |
| Increase..... | 32.3% | 9.4% | 5.9% |

In the calendar year 1916 the Virginian's freight traffic density was 4,338,103 ton-miles per mile of road operated, or 14.5% greater than it was in the fiscal year ended June 30.

Growth of Per Mile Earnings.

| Years ended June 30: | Virginian | Norfolk & Western | Chesapeake & Ohio |
|-------------------------|-----------|-------------------|-------------------|
| 1910..... | \$ 4,604 | \$18,027 | \$15,439 |
| 1911..... | 7,735 | 18,031 | 15,247 |
| 1912..... | 10,193 | 19,766 | 14,479 |
| 1913..... | 11,896 | 21,623 | 14,406 |
| 1914..... | 12,604 | 21,931 | 14,906 |
| 1915..... | 11,558 | 21,052 | 15,610 |
| 1916..... | 14,643 | 27,829 | 18,978 |
| Average Annual | | | |
| Increase..... | 23.5% | 8.1% | 3.8% |

The total operating revenues of the Virginian in the calendar year 1916 were \$16,660 per mile, an increase of 13.7% over those for the fiscal year ended June 30.

The other roads shown in foregoing tables were selected with a view of comparing the Virginian's performance with efficient trunk lines operating in similar territory, viz., the Norfolk & Western and the Chesapeake & Ohio; and with other "heavy load" carriers having low operating ratios. Like the Virginian all are essentially

“freight roads,” their freight revenues comprising from 80 to 94% of their total operating revenues.

Conclusion.

The extraordinary increases in freight traffic density and per mile earnings demonstrate ability to “get business.”

The operating comparisons, we believe, cannot fail to convince one that the Virginian is no longer merely a “road with a future,” but a road which has made more than substantial progress in its comparatively short period of existence, and a road which will continue to maintain its standard of operating efficiency among the leading freight carriers of the country.

Supplementary.

Additional bonds may be issued under the First Mortgage for the following purposes:

- (a) To the extent of \$10,000,000 for the acquisition of stocks, bonds or other obligations of other corporations owning railroads or other transportation lines or facilities, or terminals or terminal facilities, which in effect afford extensions of the Railway Company's system; such issue is, however, limited to 75% of the actual cost of such bonds, stocks or other obligations, except in respect of The Virginian Terminal Railway Company or of any Company owning a bridge connecting the railway line of the Railway Company with that of any other Company.
- (b) For additions to and improvements of the Railway Company's railway and other property, but not exceeding 75% of the actual cost thereof.
- (c) For the construction or acquisition by the Railway Company subsequent to May 1, 1912, of single track extensions of the main line of the Railway Company at the actual cost thereof, but not exceeding an average rate of \$75,000 per mile; and for single track branch lines, and for second track not less than five miles in length, at the actual cost thereof, but not exceeding an average rate of \$50,000 per mile except in the case of a railway bridge and its approaches.



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